

OBESITY AND EMOTIONAL AROUSAL AND CONTROL IN CHILDREN AGED 8 TO 11 YEARS

MARIA LOREDANA MIȚARIU¹, GEORGE CONSTANTIN MANIU²

^{1,2}“Lucian Blaga” University of Sibiu

Keywords: paediatric emotional arousal, emotional control, overweight, obese

Abstract: The purpose of this study is to present the results obtained in the base of the opinion of 95 children from general schools of Sibiu city in Romania, collected during a survey regarding emotional reactivity (arousal) and regulatory capacity (control) in early adolescence. Data were stratified by Body Mass Index (BMI) in order to analyse the relationship between obesity and emotional arousal and control in case of young adolescents. A 30-item self-reporting multidimensional instrument How I Feel - HIF created by Walden, Harris & Carton in 2003 was used. The questionnaire items refer to five different emotions: happy, sad, excited, scared and mad. Significant differences between the three subgroups (normal weight, overweight and obese) were observed for the following questionnaire items: happy and excited from position emotions subscale; sad, mad from negative emotion subscale. In case of emotion control subscale, no significant differences between subgroups have been identified although higher values were observed in the case of overweight and obese (compared to normal weight) for almost all of the subscale items. The use of HIF instrument in conjunction with other measures could provide a more comprehensive assessment of emotional functioning and different disorders in children and adolescents.

INTRODUCTION

Emotion is defined as: (a) a strong feeling deriving from one's circumstances, mood, or relationships with others, (b) any strong agitation of the feelings actuated by experiencing love, hate, fear etc., and usually accompanied by certain physiological changes as increased heart beat or respiration, and often over manifestation as crying or shaking (www.dictionary.com), (c) a strong feeling such as love or anger, or strong feelings in general (dictionary.cambridge.org). As the definition suggests but also studies from literature, the emotional functioning can cause different disorders to children.(1,2,3,4) HIF (How I Feel) can be a useful tool in understanding the interaction between excitation and control in a socio-emotional context in children.(5) Childhood obesity is a multifactorial (genetic and non-genetic) condition with important negative health, social, psychological ramifications. Aspects regarding obesity and emotional reactivity and regulatory capacity were analysed in the present study.

PURPOSE

In this study, a descriptive analysis was made to assess measurement of emotion among children aged 8 to 11 years in the context of childhood obesity

MATERIALS AND METHODS

Study population

The subjects are 95 children, 8 to 11 years of age, from general schools from Sibiu city in Romania, during November 2017. During the sports class they were weight one by one on a digital scale without shoes, and were measured on a straight wall. We made individual evidence papers with all 95 children. The BMI was calculated by dividing the body weight to height (kg/m²) and obesity was defined as BMI greater than the 95th percentile

for age and gender. Data were stratified by BMI.

Emotional arousal and control questionnaire

A 30-item self-reporting multidimensional instrument named HIF (How I Feel) created by Walden, Harris & Carton in 2003 (3) was administrated. The questionnaire items refers to five different emotions: happy, sad, excited, scared and mad, and consists in three subscales: negative emotions (items 2,5,7,8,10,13,17,20,22,23,25,28), positive emotions (items 1,4,11,14,16,19,26,29) and emotional control (items 3,6,9,12,15,18,21,24,27,30). The answers to these questions were coded on a 5-point Likert scale, with values 1- not at all true of me, 2- a little true of me, 3- somewhat true of me, 4- pretty true of me and 5- very true of me. A score was obtained as sum of all items for each subscale.

Data analysis

Data analysis and graphical representations were done using IBM SPSS Statistics v20 and Microsoft Office Excel v13 programs.(6,7) For each item graphical representation boxplots were presented, both for the whole group and for the three subgroups. For BMI stratified subgroups comparison, ANOVA test was used considering significance level 0.05 or 0.01 (8).

RESULTS

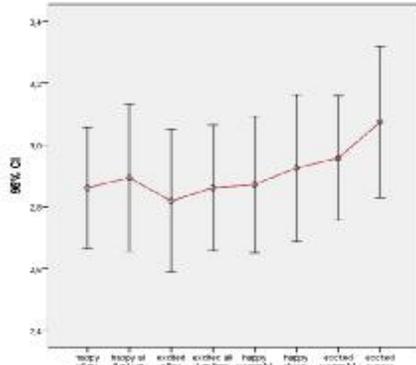
Overall results

For the whole group, the mean and standard deviation for each indicator in each of the three subscales were determinate. The hierarchy of items on subscale concerning position emotions was the following: excited frequency (often: M=2.82, SD=1.12, all the time: M=2.86, SD=0.99), happy frequency (often: M=2.86, SD=0.95, all the time: M=2.89, SD=1.15), happy intensity (powerful: M=2.87, SD=1.08, strong: M=2.93, SD=1.15), excited intensity (powerful: M=2.96, SD=0.98, strong: M=3.07, SD=1.19)

¹Corresponding author: Maria Loredana Mițariu, Str. Ștefan cel Mare, Nr. 6, Sibiu, România, E-mail: tataruloredana@yahoo.com, Phone: +40752 217167

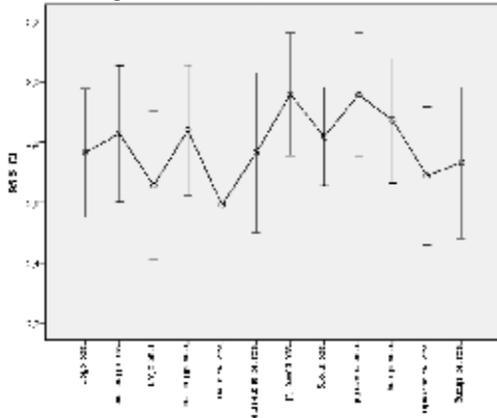
Article received on 18.01.2018 and accepted for publication on 28.02.2018
ACTA MEDICA TRANSILVANICA March 2018;23(1):20-22

Figure no. 1. Positive emotions, overall results



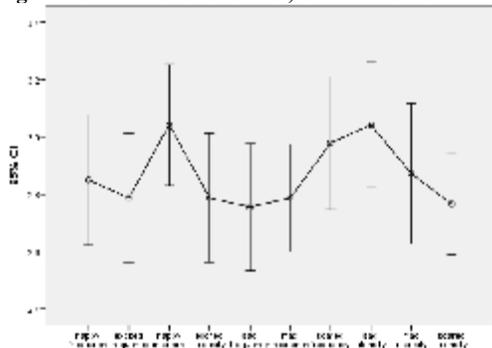
In case of negative emotion subscale there were variation of responses for the item subscale, in case of: mad frequency (often: $M=2.64$, $SD=1.19$, all the time: $M=2.82$, $SD=1.05$), scared frequency (often: $M=2.57$, $SD=1.20$, all the time: $M=2.74$, $SD=1.28$), sad intensity (powerful: $M=2.96$, $SD=0.98$, strong: $M=2.80$, $SD=0.81$), mad intensity (powerful: $M=2.96$, $SD=0.98$, strong: $M=2.85$, $SD=1.01$). The items sad frequency (often: $M=2.74$, $SD=1.03$, all the time: $M=2.81$, $SD=1.10$) and scared intensity (powerful: $M=2.69$, $SD=1.11$, strong: $M=2.71$, $SD=1.22$) were more stable.

Figure no. 2. Negative emotions, overall results



From the emotion control point of view, the hierarchy in case of emotion intensity control was: scared ($M=2.77$, $SD=0.86$), excited ($M=2.79$, $SD=1.09$), mad ($M=2.87$, $SD=1.19$), happy ($M=3.04$, $SD=1.03$), sad ($M=3.04$, $SD=1.06$), while in case of emotion intensity control the hierarchy was: sad ($M=2.76$, $SD=1.08$), excited ($M=2.79$, $SD=1.09$), mad ($M=2.79$, $SD=0.91$), happy ($M=2.85$, $SD=1.11$), scared ($M=2.98$, $SD=1.12$).

Figure no. 3. Emotions control, overall results

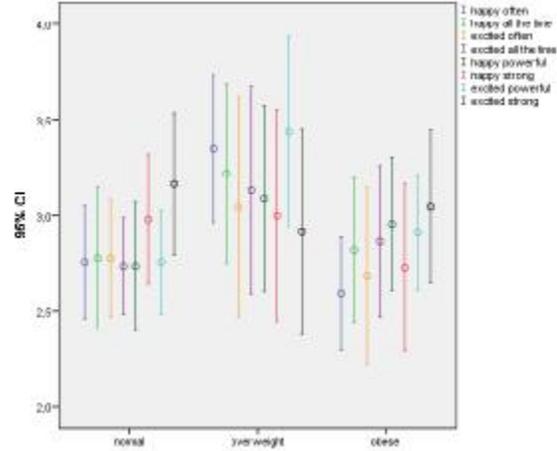


BMI stratification results

In the next phase, for the three subgroups of children (BMI stratification: normal, overweight, obese), the mean and standard deviation for each indicator in each of the three subscales were determinate.

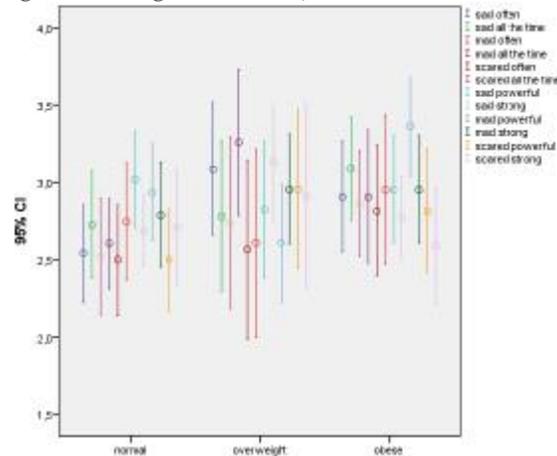
On subscale concerning position emotions, significant differences between subgroups have been identified for items happy often (normal $M=2.76$, $SD=1.03$, overweight $M=3.35$, $SD=0.88$, obese $M=2.59$, $SD=0.66$, $p=0.014$) and excited powerful (normal $M=2.76$, $SD=0.94$, overweight $M=3.43$, $SD=1.16$, obese $M=2.91$, $SD=0.68$, $p=0.021$).

Figure no. 4. Positive emotions, BMI stratification



Concerning negative emotions subscale, significant differences between subgroups have been identified for items: sad often (normal $M=2.51$, $SD=1.10$, overweight $M=3.09$, $SD=0.99$, obese $M=2.91$, $SD=0.81$, $p=0.060$), mad all the time (normal $M=2.57$, $SD=1.02$, overweight $M=3.26$, $SD=1.09$, obese $M=2.91$, $SD=0.97$, $p=0.031$), sad strong (normal $M=2.65$, $SD=0.83$, overweight $M=3.13$, $SD=0.86$, obese $M=2.77$, $SD=0.61$, $p=0.064$) and mad powerful (normal $M=2.94$, $SD=1.06$, overweight $M=2.61$, $SD=0.89$, obese $M=3.36$, $SD=0.72$, $p=0.034$).

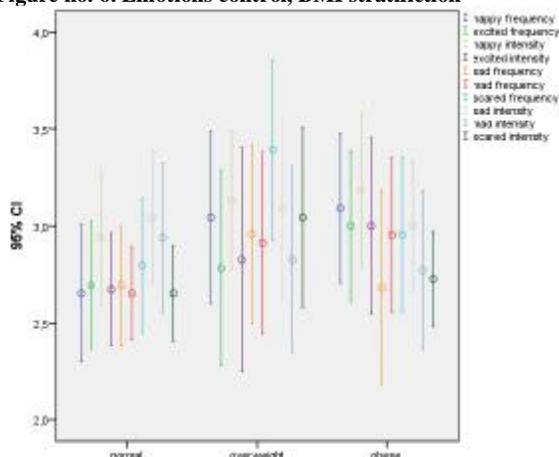
Figure no. 5. Negative emotions, BMI stratification



From the emotion control point of view, no significant differences between subgroups have been identified for none of the items. However, higher values were observed in the case of overweight and obese (compared to normal weight) for the items: happy frequency (normal $M=2.65$, $SD=1.23$, overweight $M=3.04$, $SD=1.02$, obese $M=3.09$, $SD=0.86$, $p=0.199$), excited

frequency (normal M=2.69, SD=1.15, overweight M=2.78, SD=1.16, obese M=3.00, SD=0.87, p=0.558), happy intensity (normal M=2.94, SD=1.18, overweight M=3.13, SD=0.81, obese M=3.18, SD=0.90, p=0.595), excited intensity (normal M=2.67, SD=1.00, overweight M=2.83, SD=1.33, obese M=3.00, SD=1.02, p=0.505), mad frequency (normal M=2.65, SD=0.83, overweight M=2.91, SD=1.08, obese M=2.95, SD=0.89, p=0.332), scared frequency (normal M=2.80, SD=1.20, overweight M=3.39, SD=1.07, obese M=2.95, SD=0.89, p=0.111), scared intensity (normal M=2.65, SD=0.85, overweight M=3.04, SD=1.06, obese M=2.73, SD=0.55, p=0.195).

Figure no. 6. Emotions control, BMI stratification



DISCUSSIONS

Five different emotions (happy, sad, excited, scared and mad) were considered for data preprocessing and analysis.(9,10) For the whole group, the mean values ranged between 2.82 – 3.07 for position emotions subscale, between 2.57 – 2.96 for negative emotions subscale and between 2.76 – 3.04 in case of emotion control.

Considering BMI stratification (normal, overweight, obese) the results indicated significant differences between subgroups for items happy (frequency: often) and excited (intensity: powerful) in case of position emotions subscale; for items sad (frequency: often), mad (frequency: all the time), sad (intensity: strong) and mad (intensity: powerful) in case of negative emotion subscale while in case of emotion control no significant differences between subgroups have been identified.

An obstacle to emotional functioning research during early childhood period is the lack of comprehensive in this age-specific (developmental, temperamental, maturational, social, etc.) framework.

CONCLUSIONS

New research direction should integrate study of emotional development and clinical evidences of different disorders in young children. In addition, use of HIF instrument in conjunction with other measures of emotions (11,12,13) could provide a more comprehensive assessment of emotional functioning in children and adolescents

In this context, as a continuation of the study, we consider the determination of the children profile from dental disorders point of view, respectively the analysis of the association between the emotional arousal and regulation state, dental disorders profile and BMI stratification.

REFERENCES

1. Cole PM, Luby J, Sullivan MW. Emotions and the development of childhood depression: Bridging the gap. In *Child Development Perspectives*. 2008;2:141-148.
2. Zeman J, Shipman K, Suveg C. Anger and sadness regulation: Predictions to internalizing and externalizing symptoms in children. *Journal of Clinical Child & Adolescent Psychology*. 2002;31:393-398.
3. Luby JL, Sullivan J, Belden A, Stalets M, Blankenship S, Spitznagel E. An observational analysis of behavior in depressed preschoolers: Further validation of early-onset depression. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006;45:203-212.
4. National Academies of Sciences, Engineering, and Medicine. *Mental disorders and disabilities among low-income children*. Washington, DC: The National Academies Press; 2015.
5. Walden TA, Harris VS, Catron TF. How I Feel: A Self-Report Measure of Emotional Arousal and Regulation for Children. *Psychological Assessment*. 2003;15(3):399-412.
6. Mocan I. *SPSS Introducere în analiza datelor*, Ed. Univ. Lucian Blaga Sibiu; 2005. p. 9- 100.
7. Popa EM, Hunyadi D, Muşan M, Maniu I, Brumar B, Stoica E. *Manual pentru inițiere în birotică*, Editura Universitatii Lucian Blaga Sibiu; 2007.
8. Maniu I. *Tehnici de analiză a datelor: statistica*, Ed. Univ. Lucian Blaga Sibiu; 2014.
9. Mocan (Maniu) I. *Utilizarea analizei datelor obținute din comportamentul studentului (ca și consumator de servicii educaționale) pentru dezvoltarea de strategii competitive de marketing educațional*, Editura ASE București, ISBN 978-606-505-935-1; 2015.
10. Maniu I, Wandschneider A, Neamtu B. Practical recommendations of data preprocessing and geospatial measures for optimizing the neurological and other pediatric emergencies management, 17 *Cross-cultural knowledge exchange. Interactions between law, education, tourism & culture. – SEA International Conference*, 8-9 July, Constanta, SEA Practical Application of science Journal, ISSN-L:2360-2554, Fascicle Health and medical management; 2017.
11. Gratz KL, Roemer L. Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*. doi: 10.1023/B:JOBA.000007455.08539.94. 2004;26:41-54.
12. MacDermott ST, Gullone E, Allen SJ, Tonge B, King NJ. The Emotion Regulation Index for Children and Adolescents (ERICA): A psychometric investigation. *Journal of Psychopathology and Behavioral Assessment*. 2010;32:301-314. doi:10.1007/s10862-009- 9154-0.
13. Weinberg A, Klonsky E. Measurement of emotion dysregulation in adolescents. *Psychological Assessment*. 2009;21:616-621. doi: 10.1037/a0016669.